

**Hydroids colonizing the carapaces of the  
ostracode *Philomedes brenda* from the  
Beaufort Sea, Arctic Ocean**

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*Abstract.*—A hydroid in the superfamily Bougainvillioidea or Pandeoidea colonizing the carapaces of the mydocopid ostracode *Philomedes brenda* (Baird 1850) collected in the Beaufort Sea, Arctic Ocean, is described and illustrated.

The Beaufort Sea forms that part of the Arctic Ocean lying north of Alaska and Canada, eastward of Point Barrow and westward of Banks Island and Prince Patrick Island. During a study of mydocopid ostracodes collected in bottom sediments of the continental shelf and slope of the Beaufort Sea from 1971 to 1976, an athecate hydroid was observed colonizing the outer surface of carapaces of the mydocopid ostracode *Philomedes brenda* (Baird 1850) (Kornicker 1988: abstract, fig. 2a, b).

The only previous report of Hydrozoa attached to the carapaces of mydocopid ostracodes was that of Baker (1975:78, fig. 17b, c, j) who observed them attached to *Euphilomedes carcharodonta* (Smith 1952), *Scleroconcha trituberculata* (Lucas 1931) and *Eusarsiella "tubipora"* (Darby 1965) on the southern California continental shelf. Baker (1975:78) reported that the same species appeared to be present on all three ostracode species and that both feeding and reproductive polyps were present, but it was not possible to identify the hydrozoan.

The purpose of the present paper is to describe the morphology of the hydrozoan on the Arctic ostracodes, and to further identify it. For the latter purpose the junior author made a nematocyst slide preparation from one of the hydranths. The nematocyst

categories are of types widespread in the superfamilies Bougainvillioidea and Pandeoidea. Without more evidence concerning the life cycle of the hydroid it is not prudent to carry the identification to family or genus.

Hydroids of the Arctic Seas of Russia have been monographed by Naumov (1969), and those of northern Canada by Calder (1970, 1972). The Beaufort Sea species seems different from any mentioned in these works.

Specimens were prepared for the Scanning Electron Microscope by critical point drying. All specimens, including those in alcohol, have been placed in collections of the National Museum of Natural History, Department of Invertebrate Zoology, and have been assigned USNM numbers. Bottom collections were made with a Smith-McIntyre Grab (SMG) covering 0.1 square meters.

Class Hydrozoa  
Subclass Hydroida  
Order Leptolida  
Superfamily Bougainvillioidea  
or Pandeoidea  
Figs. 1–3

*Material.*—All hydroids are on carapaces of *P. brenda* that have been given USNM

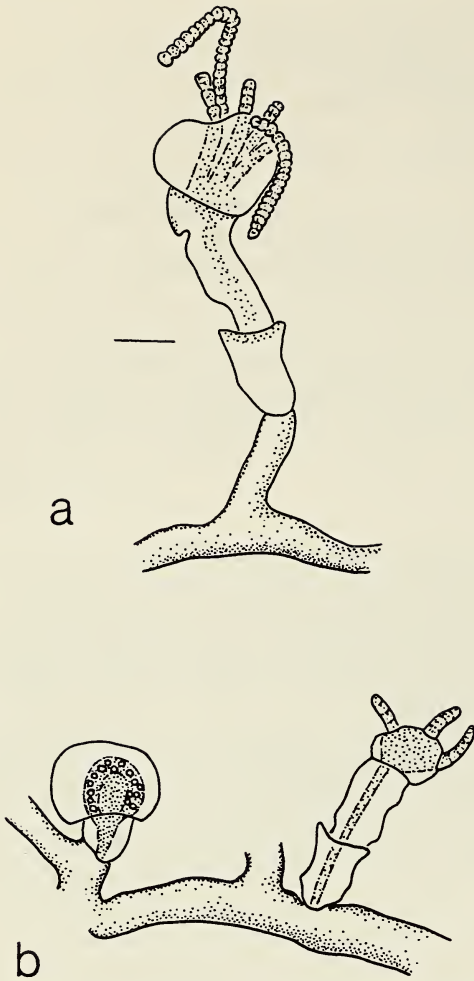


Fig. 1. Hydroid on *P. brenda* USNM 193284B: a, Hydranth with tentacles and T-shaped segment of pseudohydrorhiza; b, Hydranth with tentacles, medusa bud, and segment of pseudohydrorhiza. (Scale bar 0.1 mm.)

numbers. USCGC *Glacier*, cruise WEBSEC71, 12 Sep 1971, station C7184, sample SMG-1017-11; 76°16'48"N, 150°18'30"W, 831 m: USNM 193284A, adult female, USNM 193284B, ovigerous female. Ice Station OCS-1, 29 Oct 1975, 71°19'06"N, 152°34'00"W, 59 m: sample SMG-1092-16, USNM 158419A, ovigerous female; sample SMG-1091-12, USNM 158422, adult female. Ice Station OCS-1, sample SMG-1093-17, 30 Oct 1975,

71°21'36"N, 152°35'00"W, 102 m, USNM 158466, adult female. Ice Station OCS-2, station PPB-100, sample SMG-1137-14, 19 May 1976, 71°26'30"N, 152°38'42"W, 99 m, USNM 158536, adult female. Ice Station OCS-6, station PP-100, 3 Nov 1976, 71°21'54"N, 152°33'24"W, 99 m: sample SMG-1491-09, USNM 193282, adult female; sample SMG-1494-10, USNM 193283, ovigerous female.

*Distribution.*—Beaufort Sea, 59–831 m.

*Description* (Figs. 1–3).—Colonies on carapaces of adult and ovigerous females of *P. brenda* (carapace length 2.80–3.06 mm) (Figs. 2a, b, f, 3a, b, d). Pseudohydrorhiza filiform (stolon width about 0.07 mm; individual stolon length about 0.5 mm or less) (Fig. 3d); polyp with maximum length about 0.75 mm; hydrocaulus unbranched; hydranths with filiform tentacles forming single whorl (length of longest hydranths and tentacles about 0.46 mm) (Figs. 1, 2c–e, 3a, b, e, f); larger hydranths with 4–6 tentacles (Fig. 1a), but most with 2–4 (Figs. 2c–e, 3e, f); stalks with wrinkled perisarc and either cylindrical (Fig. 3a–c) or with indentation at base (Fig. 3b), some with proximal flaring section (Fig. 1). Sparse oval processes (possibly medusa buds or sporosacs, maximum diameter 0.17 mm) originating directly from pseudohydrorhiza (Fig. 1b).

Nematocyst complement of a hydranth comprising desmonemes (4.1  $\mu\text{m}$  long  $\times$  2.8  $\mu\text{m}$  wide) and heterotrichous microbasic euryteles (6.5  $\mu\text{m}$  long  $\times$  2.8  $\mu\text{m}$  wide). One specimen with a developing gonophore; development too early to determine whether it would become a medusa or a fixed gonophore.

*Discussion.*—The ostracode *P. brenda* has pan-Arctic distribution (Kornicker 1982:4). Juveniles are not capable of swimming and are restricted to the bottom where they either crawl on the substrate or burrow into it. When they become adults, both sexes become capable of swimming and rise in the water to couple. After mating, the female either rubs or breaks off its swimming



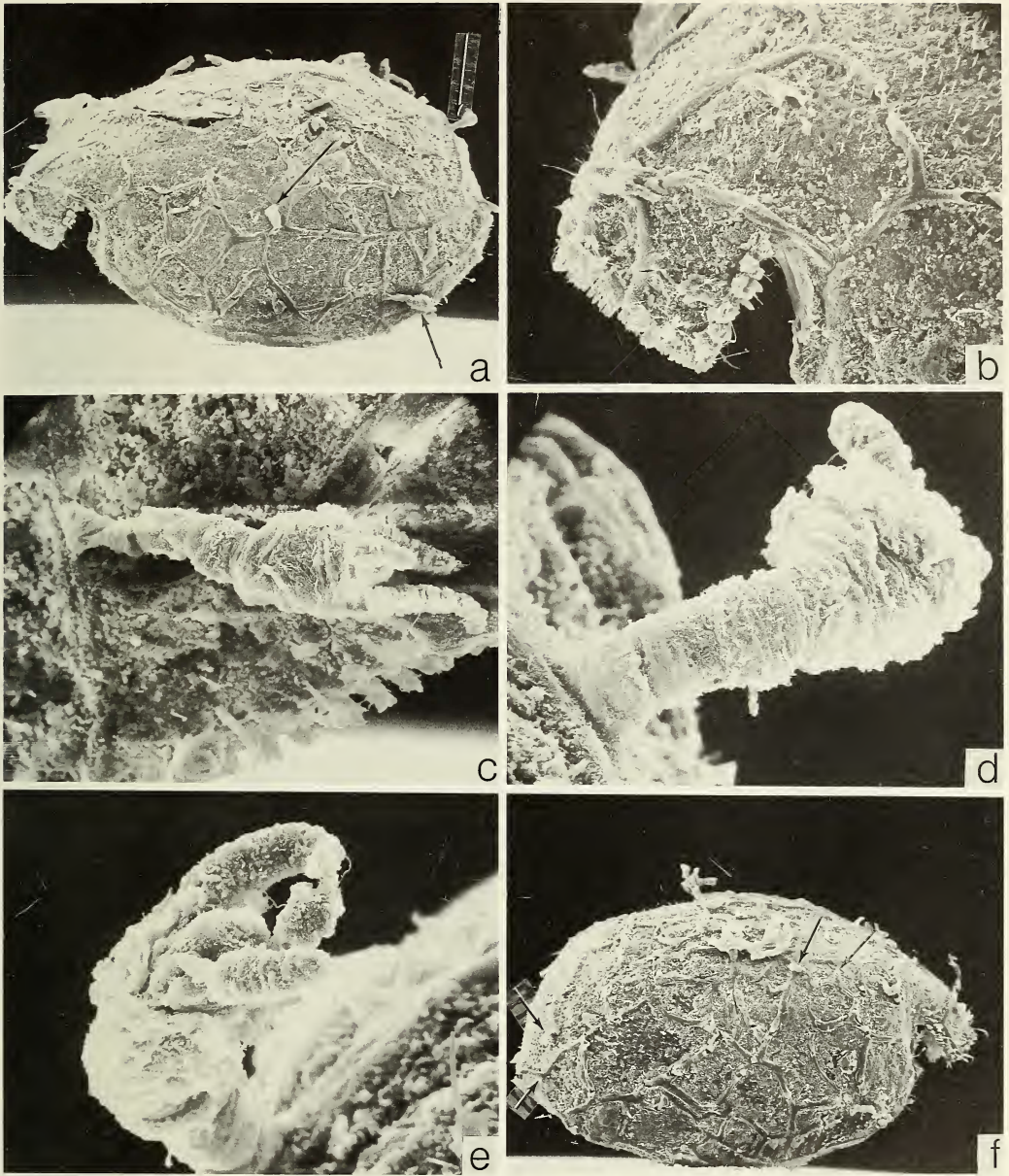


Fig. 2. Hydroid on left valve of *P. brenda* USNM 158536 (length 3.06 mm): a, Pseudohydrorhiza and 3 hydranths (arrows),  $\times 22.8$ ; b, Detail of pseudohydrorhiza, from a,  $\times 67$ ; c, Detail of hydranth on lower right of a,  $\times 171$ ; d, Detail of hydranth on upper right of a,  $\times 336$ ; e, Hydranth in d reoriented,  $\times 336$ . Hydroid on right valve of USNM 158536: f, Pseudohydrorhiza and 4 hydranths (arrows),  $\times 22.8$ .

bristles and is again restricted to the bottom (Elofson 1969:165). The eight females having attached hydrozoans all have broken swimming bristles, indicating that they had

mated and returned to the bottom. The presence of hydrozoans on adult females only, and not on juveniles, suggests that the hydroids may have become attached when



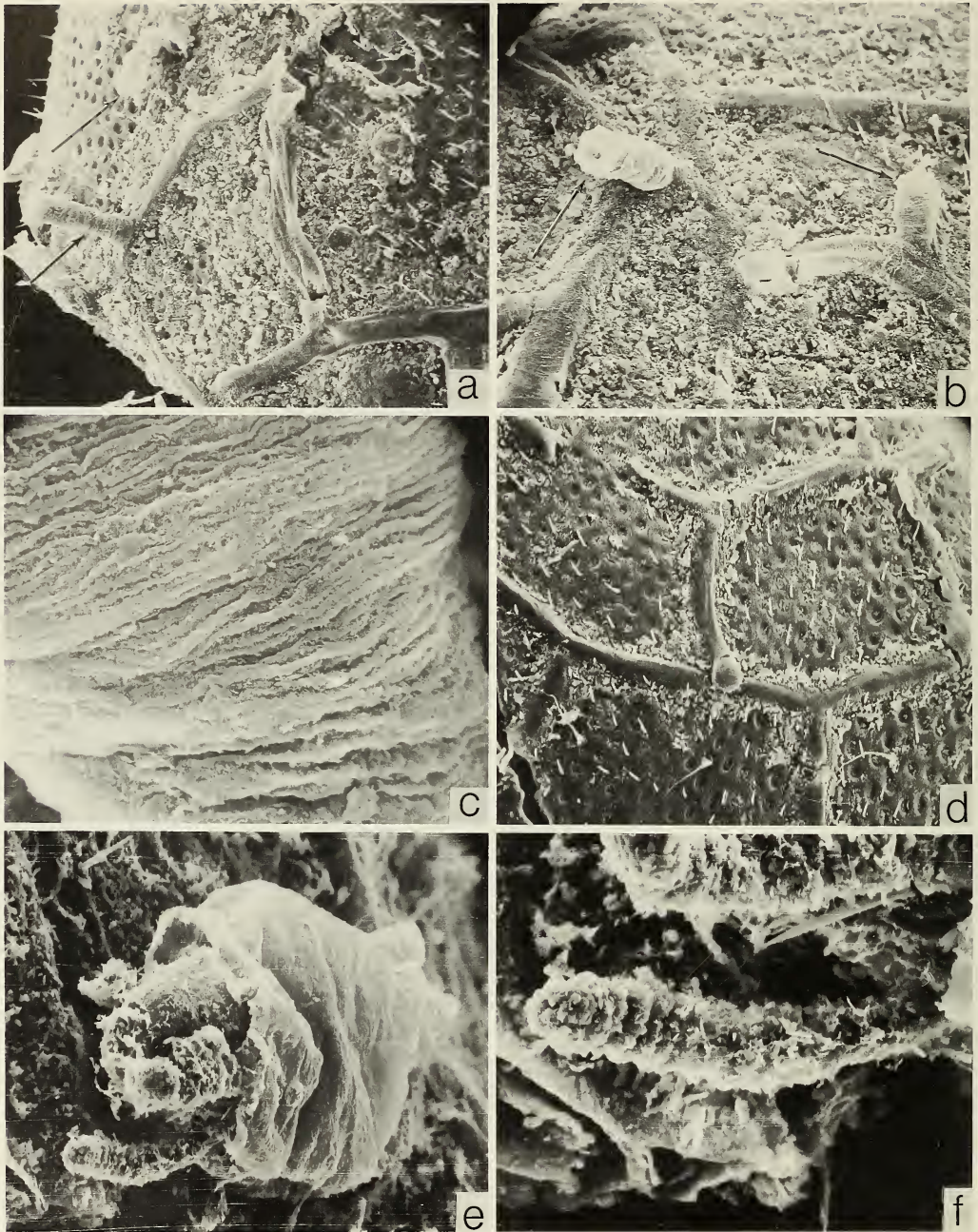


Fig. 3. Hydroid on left valve of *P. brenda* USNM 158536: a, Detail from left end of Fig. 2f showing 2 hydranths (arrows),  $\times 101$ ; b, Detail of upper right of Fig. 2f showing hydranths (arrows),  $\times 174$ ; c, Detail showing surface crinkles of right hydranth shown in b,  $\times 1448$ . Hydroid on right valve of *P. brenda* USNM 158466 (length about 3 mm): d, Detail of pseudohydrohrhiza near anterior of valve,  $\times 119$ ; e, Hydranth with tentacles,  $\times 326$ ; f, Detail of tentacles in e,  $\times 724$ .

the ostracode was swimming in the water column. The absence of hydroids on adult males, which probably spend more of their adult life swimming than females, could be the result of having collected relatively few such specimens, which probably die soon after mating. According to Elofson (1969: 160, 161, 165) adult females of *P. brenda* live several years. Although the density of hydrozoan growth on the carapaces (Figs. 2, 3) could be interpreted to suggest colonization over a long period, it is known that some hydroid colonies grow rapidly after planula settlement, i.e., a few days or weeks.

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